

Our Docket No: 42P10923

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
Donghui Lu) Examiner: Stouffer, Kelly M.
Application No: 10/811,591) Art Unit: 1792
Filed: March 29, 2004) Confirmation No: 2696
For: Enhanced Dielectric Layers Using)
Sequential Deposition)

RESPONSE TO OFFICE ACTION

Mail Stop Amendment
Commissioner for Patents
P.O Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action mailed December 3, 2008, Applicants respectfully request the Examiner to enter the following amendment and to consider the following remark.

CERTIFICATE OF EFS Web

I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below to the United States Patent and Trademark Office.

Date of Deposit: February 9, 2009
Name of Person Mailing Correspondence: Debbie Casias
/Debbie Casias/ / February 9, 2009 /
Signature Date

In the claims:

Following is a complete set of claims as amended with this Response.

1. (Currently Amended) A method comprising:

initiating a flow of set up gases into a plasma enhanced sequential chemical vapor

deposition (PECVD) chamber;

establishing an operational pressure in the chamber;

keeping a deposition gas out of the chamber;

applying plasma power in a radio frequency (RF) form to the a plasma enhanced
sequential chemical vapor deposition chamber;

introducing a flow of the deposition a deposition gas into the chamber after
applying the plasma power during the application of plasma power;

starting nitride deposition in the chamber from the deposition gas to form a first
portion of a layer on a substrate based on the application of plasma power;

stopping the flow of the deposition gas into the chamber during the application of
plasma power; and

turning off the plasma power after the flow of deposition gas is stopped.

2. (Original) The method of Claim 1, further comprising:

reapplying plasma power;

reintroducing a deposition gas after reapplying the plasma power;

starting nitride deposition in the chamber to form a second portion of the layer on
the substrate after reapplying the plasma power; and

turning off the plasma power.

3. (Original) The method of Claim 2, wherein introducing a deposition gas comprises introducing silane gas.

4. (Original) The method of Claim 2, wherein introducing silane gas comprises introducing silane gas at least 0.5 seconds after applying plasma power.

5. (Original) The method of Claim 2, wherein introducing silane gas comprises diverting silane gas from a pump to the deposition chamber.

6. (Canceled)

7. (Currently Amended) The method of Claim 1 ~~Claim 6~~, wherein initiating set-up gas flow comprises flowing ammonia and nitrogen gases into the chamber.

8. (Previously Amended) The method of Claim 2, further comprising pumping away residue gases after turning off the plasma power and before reapplying the plasma power.

9. (Canceled).

10. (Previously Amended) The method of Claim 2, further comprising moving the wafer to another chemical vapor deposition position after forming the first portion of the layer and before forming the second portion of the layer.

11. (Original) The method of Claim 1, further comprising repeating turning on and off the nitride supply and the plasma power substantially simultaneously until a complete layer is formed.

12-20. (Canceled)

21. (Previously Presented) An apparatus having a first portion of a nitride deposition layer formed on a substrate in a plasma enhanced sequential chemical vapor deposition chamber in accordance with the method of Claim 1.

22. (Previously Presented) The apparatus of Claim 21, wherein the layer is a nitride etch stop layer.

23. (Previously Presented) The apparatus of Claim 21, wherein, the layer has no intra-film interfaces corresponding to transitions of the sequential chemical vapor deposition formation.

24. (Previously Presented) The apparatus of Claim 14 wherein the layer is a nitride etch stop layer.

25. (Previously Presented) The apparatus of Claim 14 wherein the layer is a silicon nitride layer.

26. (Previously Presented) The apparatus of Claim 14 wherein the layer is an insulating layer for a gate of a flash memory transistor.

27. (Previously Presented) The apparatus of Claim 21, further comprising:
a drain area;
a source area; and
a gate layer coupled to the drain area and the source area;
wherein the layer overlies the gate layer, the nitride layer having no intra-film interfaces corresponding to transitions of the sequential deposition.